

What is claimed is:

1. Apparatus for combining a first substance with a second substance that cannot be mixed directly with the first substance without damaging at least
5 one of the first substance and the second substance, said apparatus comprising:

a primary mixing unit for mixing the first substance with a first liquid to produce a first solution, the first solution having a first predetermined concentration of first substance capable of being mixed directly with the
10 second substance without damaging one of the first substance and the second substance; and

a secondary mixing unit for mixing the first solution with the second substance to produce a second solution having a second predetermined concentration of first substance relative to the second substance.

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2. Apparatus according to claim 1, wherein the first substance comprises an anti-pathogen compound and the second substance comprises red blood cell concentrate.

- 20 3. Apparatus according to claim 2, wherein the first liquid comprises a buffer solution.

4. Apparatus according to claim 1, wherein the first liquid comprises a diluting solution.

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5. Apparatus according to claim 1, wherein the first solution has a limited useable lifetime, and wherein the first solution is mixed with the second substance during the useable lifetime of the first solution.

- 30 6. Apparatus according to claim 1, further comprising:

a process controller for controlling the primary and secondary mixing units and coordinating mixing operations of the primary and secondary mixing units.

5 7. Apparatus according to claim 6, wherein the process controller monitors the quantity of first solution and prevents the secondary mixing unit from mixing the first solution with the second substance if there is an insufficient quantity of first solution for preparing the second solution.

10 8. Apparatus according to claim 7, wherein the process controller coordinates the primary mixing unit to produce a sufficient quantity of first solution for preparing the second solution.

9. A method for combining a first substance with a second substance that
15 cannot be mixed directly with the first substance without damaging at least one of the first substance and the second substance, the method comprising:

 mixing the first substance with a first liquid to produce a first solution, the first solution having a first predetermined concentration of first substance capable of being mixed directly with the second substance without damaging
20 one of the first substance and the second substance; and

 mixing the first solution with the second substance to produce a second solution having a second predetermined concentration of first substance relative to the second substance.

25 10. A method according to claim 9, wherein the first substance comprises an anti-pathogen compound and the second substance comprises red blood cell concentrate.

30 11. A method according to claim 10, wherein the first liquid comprises a buffer solution.

12. A method according to claim 9, wherein the first liquid comprises a diluting solution.

13. A method according to claim 9, wherein the first solution has a limited useable lifetime, and wherein mixing the first solution with the second substance to produce a second solution comprises:

mixing the first solution with the second substance during the useable lifetime of the first solution.

14. A method according to claim 9, further comprising:
monitoring the quantity of first solution; and
preventing said mixing of the first solution with the second substance if there is an insufficient quantity of first solution for preparing the second solution.

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15. A method according to claim 14, further comprising:
preparing a sufficient quantity of first solution for preparing the second solution; and

enabling said mixing of the first solution with the second substance when there is a sufficient quantity of first solution for preparing the second solution.

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16. A mixing system comprising:

a primary mixing unit operatively coupled to mix a first substance with a first liquid to produce a first solution, the first solution stored in a container; and

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a plurality of secondary mixing units coupled to the container, each of said secondary mixing units operatively coupled to mix first solution from the container with a second substance to produce a second solution having a second predetermined concentration of first substance relative to the second substance.

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17. A mixing system according to claim 16, wherein the first substance comprises an anti-pathogen compound and the second substance comprises red blood cell concentrate.
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18. A mixing system according to claim 17, wherein the first liquid comprises a buffer solution.
19. A mixing system according to claim 16, wherein the first liquid
- 10 comprises a diluting solution.
20. A mixing system according to claim 16, wherein the first solution has a limited useable lifetime, and wherein the first solution is mixed with the second substance by the plurality of secondary mixing units during the
- 15 useable lifetime of the first solution.
21. A mixing system according to claim 16, further comprising:
a process controller for controlling the primary and secondary mixing units and coordinating mixing operations of the primary and secondary
- 20 mixing units.
22. A mixing system according to claim 21, wherein the process controller monitors the quantity of first solution and prevents the secondary mixing units from mixing the first solution with the second substance if there is an
- 25 insufficient quantity of first solution for preparing the second solution.
23. A mixing system according to claim 22, wherein the process controller coordinates the primary mixing unit to produce a sufficient quantity of first solution for preparing the second solution by the plurality of secondary
- 30 mixing units.

24. A mixing system according to claim 21, wherein the plurality of secondary mixing units are coupled to the container of first solution via a single connection to the container.
- 5 25. A mixing system according to claim 24, wherein each of the secondary mixing units requires priming with first solution prior to mixing the first solution with the second substance, and wherein the process controller coordinates priming of the plurality of secondary mixing units from the container of first solution.
- 10 26. A mixing system according to claim 25, wherein the process controller coordinates priming of the plurality of secondary mixing units symmetrically outward from the middle of the plurality of secondary mixing units.
- 15 27. A mixing system according to claim 26, comprising an odd number of secondary mixing units including a middle unit, wherein the process controller begins priming with the middle unit and continues priming outward from the middle unit with successive pairs of units.
- 20 28. A mixing system according to claim 16, further comprising:
a management rack for holding a plurality of second substance containers and a plurality of second solution receptacles for use by the plurality of secondary mixing units.
- 25 29. A mixing system according to claim 28, wherein the management rack comprises a multiple compartment tray for holding the plurality of second solution receptacles.
- 30 30. A mixing system according to claim 29, wherein the multiple compartment tray is removable from the rack and is stackable with other trays while holding the plurality of second solution receptacles.

31. A mixing system according to claim 21, wherein the process controller instructs the operator to perform various tasks, and wherein the process controller focuses the operator on one task at a time.
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32. A mixing system according to claim 31, wherein the process controller controls at least one visual indicator on each mixing unit for focusing the operator on one task at a time.
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33. A mixing system according to claim 32, wherein the process controller provides a graphical display to the operator for focusing the operator on one task at a time, the graphical display including a representation of the at least one visual indicator of at least one mixing unit.
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34. A mixing system according to claim 31, wherein the process controller provides a graphical display to the operator for focusing the operator on one task at a time, the graphical display including a representation of at least one mixing unit, the graphical display further including a highlighting icon for indicating any mixing unit associated with the task.